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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,513	01/30/2006	Sai Shankar Nandagopalan	PHUS030255	6162

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EXAMINER
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SHEDRICK, CHARLES TERRELL

ART UNIT	PAPER NUMBER
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2617

MAIL DATE	DELIVERY MODE
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11/09/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/566,513	<b>Applicant(s)</b> NANDAGOPALAN, SAI SHANKAR	
	<b>Examiner</b> CHARLES SHEDRICK	<b>Art Unit</b> 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 7/16/09 have been fully considered but they are not persuasive.
2. Applicant argues in claim 1, Cimini does not define a ratio between a plurality of streams based on the bandwidth requirement. Although Cimini may disclose a ratio between physical data rates and MSDU size limits and also adapting the MSDU size limit based on the network activity, nowhere does Cimini disclose, teach, or even suggest defining a ratio between data streams, based on bandwidth requirement. The packet shaping methodologies as disclosed by Cimini may guarantee a minimum rate and also provide different data rates by adjusting the MSDU size limit based on the desired throughput, however, this is not the same as defining a ratio between data streams. Thus, Applicant respectfully submits that Cimini does not disclose or even suggest all limitations in claim 1.
3. However, the Examiner respectfully disagree. Consider 1) The claim language indicates at least one wireless station – which leaves the claim language open to the reasonable interpretation that the plurality of streams are generated from the at least one station (e.g., parallel data streams multiplexed or a plurality of serial data streams) 2.) the ratio is at least a number between two things. Consider, in the instant case if one were to ensure an equal fairness or balanced proportion of bandwidth then at the very basic level the defined ratio would include equal portions which implies at least a 1:1 ratio (i.e., a plurality of streams at the same data rate) 3.) The Bandwidth effectively used by each node is inversely proportional to its data rate as noted by Cimini in at least paragraph 0036, therefore the data rate is directly related to the

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bandwidth. Furthermore, the desire to keep the same maximum transmission time limit instead of the same maximum packet size limit ensures the fair resource sharing between the nodes with variable rates (i.e., creating at least a 1:1 or balanced ratio ) – paragraph 0049. Consider in the prior art the MDSU size is the same for all nodes, Thus the low rate node may transmit longer time and take a larger share of the bandwidth. The Fragments are based on the MDSU size and the data rate the channel will sustain - paragraph - 0060 and since the data rate is inversely proportional to the bandwidth the bandwidth requirements are captured.

4. Therefore, based on the broadest reasonable interpretation accompanied by the response above the rejection is maintained as proper.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindskog et al. US Patent Pub. No.: 2005/0018638, hereinafter, "Lindskog" in view of Cimini, JR . et al. US Patent Pub. No.: 2003/0133427, hereinafter, "Cimini"

Consider claims **1, 23 and 24**, Lindskog teaches a method for providing bandwidth fairness in wireless networks, comprising: receiving at least one stream of packets on an access point for at least one wireless station(**i.e., transmitting variable length packets**) (**e.g., see at least 0015**); setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets(**e.g., see at least paragraphs 0016, 0021-0022 and 0051-0053 and see figure 1a and 1b, 7 and 8**); and transmitting the successive packets of the set at least one stream of packets from the access point to the at least one wireless station without back-off (**e.g., see at least paragraphs 0016, 0021-0022 and 0051-0053 and see figure 1a and 1b, 7 and 8**).

However, Lindskog does not explicitly teach determining a bandwidth requirement for transmission of the at least one stream of packets to at least one wireless station; defining a ratio between a plurality of streams based on the bandwidth requirement.

In analogous art, Cimini teaches determining a bandwidth requirement for transmission of the at least one stream of packets to at least one wireless station(**e.g., the bandwidth/datarate can be determined in a static mode as illustrates in at least table 1 or adaptively as described in at least table 2.** ); defining a ratio between a plurality of streams based on the bandwidth requirement(**e.g., the traffic is shaped in order to provide the proper ratios for transmission as discussed in paragraphs 0051 -0061. The MSDU size is based on the desired throughput**).

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Therefore, it would have been obvious to a person of ordinary skill at the time the invention was made to modify Linskog to include teaching determining a bandwidth requirement for transmission of the at least one stream of packets to at least one wireless station; defining a ratio between a plurality of streams based on the bandwidth requirement for the purpose of properly shaping traffic. One of ordinary skill in the art would further recognize the benefit of the more bit as illustrated by Linskog to effectively communicate additional data transmission.

Consider **claim 2 and as applied to claim 1**, Linskog as modified by Cimini teaches wherein the step of setting the more fragment bit, comprises setting the more fragment bit in a MAC header accompanying the set at least one stream of packets to a value of 1 (e.g., see at least **paragraphs 0016, 0021-0022 and 0051-0053 and see figure 1a - 8**).

Consider **claim 3 and as applied to claim 1**, Linskog as modified by Cimini teaches wherein the at least one stream of packets comprises a plurality of packets (e.g., see at least **paragraphs 0016 0021-0022 and 0051-0053 and see figure 1a - 8**).

Consider **claim 4 and as applied to claim 1**, Linskog as modified by Cimini teaches wherein the more fragment bit is not set in a last of at least one stream of packets to be transmitted (e.g., see at least **paragraph 0016** ).

Consider **claims 5, 11 and 17 and as applied to claims 1, 23 and 24**, Linskog as modified by Cimini teaches for providing bandwidth and airtime fairness in wireless networks, comprising: receiving a packet on the access point for the at least one wireless station calculating an airtime requirement for transmitting the packet to the at least one wireless station (e.g., **paragraphs 0015 and 0016**); setting a time counter on the access point based on the airtime requirement (i.e., **predetermined time interval** ) (e.g., see at least **paragraphs 0015-0016 and**

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**figure 6**); and determining whether the packet can be transmitted before the time counter expires(**e.g., see at least paragraphs 0015-0016 and figure 6**).

Consider **claims 6 and 16 and as applied to claims 5 and 11**, Lindskog as modified by Cimini teaches the claimed invention further comprising transmitting the packet to the access point (**e.g., see at least 0015-0016 and 0026**).

Consider **claims 7, 13, and 19 and as applied to claim 5, 11 and 17**, Lindskog as modified by Cimini teaches the claimed invention splitting the packet into a set of fragments if the packet cannot be transmitted before the time counter expires(**i.e., the packet is fragmented to accommodate timing** )(e.g., see abstract and at least paragraph 0020).

Consider **claim 8 and as applied to claim 7**, Lindskog as modified by Cimini teaches the claimed invention transmitting the set of fragments until the time counter expires (**e.g., see abstract and at least paragraph 0020**).

Consider **claims 9,14 and 20 as applied to claims 7, 13 and 19** , Lindskog as modified by Cimini teaches wherein the splitting step comprises splitting the packet into equal sub-packets to yield a set of fragments (**e.g., see at least paragraph 0039**).

Consider **claims 10,15 and 21 and as applied to claims 5 and 1 and 17**, Lindskog as modified by Cimini teaches wherein the airtime requirement is calculated based on a size and a transmission rate of the packet (**i.e., the number of packets and the size is directly related to the timing is which related to the transmission rate**)(e.g., see at least paragraphs 0051 - 0056)..

Consider **claims 12 and 18 and as applied to claims 11 and 17** , Lindskog as modified by Cimini teaches further comprising means for communicating the packet if the packet can be

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transmitted to the at least one wireless station before the time counter expires(e.g., see at least **0015-0016 and 0051-0056**).

Consider **claim 22 and as applied to claim 17**, Lindskog as modified by Cimini teaches wherein the program product is implemented on the access point that is implemented within a wireless local area network (e.g., see at least **paragraph 0026**).

### ***Conclusion***

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHARLES SHEDRICK whose telephone number is (571)272-8621. The examiner can normally be reached on Monday thru Friday 8:00AM-4:30PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571)-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Charles Shedrick/  
Examiner, Art Unit 2617

/Lester Kincaid/  
Supervisory Patent Examiner, Art Unit 2617